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ABSTRACT

This report, along with the separate report by Drake Sheahan/Stewart Dougall Consultants entitled: "Book Processing Facility Design" available as LI 001 919, should clear up two unfounded assumptions that (1) the actual processing of 2,500,000 volumes cannot be done at one location and (2) the printing times required are too unrealistic to be handled on the computer peripheral equipment. The Drake Sheahan/Stewart Dougall report indicates that 2,500,000 volumes can be processed more efficiently in one location than is now being done in 19 different locations or than could be done in 6 different locations. Cost projections in this document are based on data in that report. Estimates of computer print-times indicate that all the reports which must be handled, as well as all the cards which must be produced, are well within the capability of the equipment contemplated. The assumptions and methodology used to project unit costs are included. (NH)

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# ANYLTS' COST PROJECTIONS AND SUGGESTED PHASE-IN SCHEDULES

A Report to the Board of Trustees

December 3, 1969

LZ 001934

## ANYLTS' COST PROJECTIONS AND SUGGESTED PHASE-IN SCHEDULES

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# I. INTRODUCTION

## General

This document represents the completion of a great deal of planning by the ANYLTS' staff. We believe this report, and the one by our materials handling consultants, should clear up two unfounded assumptions:

a) the actual processing of 2,500,000 volumes cannot be undertaken in one location; and

b) the printing times required are so unrealistic that the volume of work cannot be handled on the computer peripheral equipment.

The separate report by Drake Sheahan/Stewart Dougall indicates that processing 2,500,000 volumes can be done in one location and done more efficiently than is now being done in 19 different locations or than could be done in 6 different locations. Certain of the cost projections in this document are based on data in that report. In addition, our estimate of computer print-times in Part V indicates that all the reports which must be handled, as well as all the cards which must be produced, are well within the capability of the equipment contemplated.

## Assumptions and Methodology Relating to Unit Cost Projections

For the purpose of making the projection of unit costs, operating costs have been divided into major aspects:

1) Fixed

Included are those items of overhead which will have to be assumed regardless of the number of orders handled. Two major items are building and computer rental. As described in the back-up data for these projections (Part III), certain salaries are also included. All fixed costs have been estimated in relation to a "full-volume" figure of 2,500,000 items annually.

and

2) Variable

These include labor, supplies, and second shift computer rental, which are incurred as the volume of orders increases. Variable costs have been estimated on the basis of dollars per 100,000 volumes to arrive at percentage of "full volume" at the various levels of activities shown on the computer printouts. The reason for doing this is explained in a) below.

It should be noted that the projections of unit costs are separated into three parts:

1) Part IIa shows those costs related to the volumes of activities which would be assumed in accordance with the proposed sequence of phase-in of system technical services (Part IV). For example, at an annual volume of 1,500,000, unit costs are projected at $1.58; at 2,300,000, unit costs are projected at $1.17.

2) Part IIb shows costs related to hypothetical volumes of activity at nine different levels. For example, an an annual volume of 1,000,000, unit costs are projected at $2.18; at 2,700,000, unit costs are projected at $1.05.

3) Part IIc graphically illustrates how unit costs decline as volume increases. This is a compilation of the annual volume levels in Parts IIa and IIb.

It has been assumed that in the pilot only 80,000 orders will be handled for the six-month period. It should be noted that the fixed costs at this level of activity appear to be in excess of 98%, and variable costs appear negligible. This is somewhat misleading. The fixed costs may be closer to 90 or 95%. There are several reasons why this is so:

a) Variable costs are expressed in costs per 100,000 volumes processed, and not in terms of costs of full-time equivalent positions. This approach was adopted because of the difficulty in trying to estimate at what levels additional processing, key punch, and other personnel will be required. Only the experience of actual operation will enable such a forecast to be made with accuracy. For example, during the pilot the computer printout indicates the cost to pack books for shipping will be $998.00; however, at least a full-time person will be required for this brief period, particularly if phase-in of systems is to be accomplished immediately after the pilot.

b) In the initial phase-ins, variable costs will not increase in direct proportion with increases in processing activity due to the inefficiency inherent in low-volume operatio This is because personnel on the processing line and in other activities will probably handle more than one operation, which will tend to be more costly in terms of actual productivity.

c) Included in the fixec cost categories are certain continuing fixed costs, which also have variable elements. However, the exact relationship of the variable elements of the

following categories cannot be predicted at this time, although we can attempt to make estimates of the difference in total cost for these as shown in Parts IIa and IIb versus the probable lesser costs in the pilot:

| | | |
|---|---|---|
| Telephone | - | $ 25,000 |
| Electricity | - | 20,000 |
| NYPL Service & Trans. | - | 65,000 |
| Traffic Consultant | - | 20,000 |
| Postage | - | 20,000 |
| Printing | - | 20,000 |
| Invoice Section | | 34,000 |
| | | $204,000 ± |

But any such apparent savings probably will be offset by variable costs which will be in excess of the dollar amounts actually shown in the computer projections for the reason explained in a) above.

Salaries and Design Year

A large part of operational costs are related to personnel expenditures. In order to make the unit cost projections, grade levels and salary ranges were assigned to the various position classifications shown in the Table of Organization (Part VII). Grade levels and salary ranges were derived from the 1969 Nassau County Graded Salary Plan (Part VIII B). The midpoint of these scales were used as the basis for computing the salary for each position, and 30% was added for fringe benefits. Where the Board of Trustees had already approved pay scales, as in the case of EDP personnel, and administrative positions, existing scales and actual salaries scheduled to be paid for 1970 were used.

The projected unit costs shown in Parts II a, b, and c are presumed to be for 1970, despite the fact that other than for scales adopted by the ANYLTS Board, salary levels are projected higher than the beginning levels of the scales assigned. Therefore, we believe our unit cost projections to be not only quite realistic, but perhaps somewhat higher than actual experience may indicate.

Conclusions

It is clear from these projections that aside from investment in further developmental costs (Part VI A) and capital costs (Part VI B) the State must be prepared to subsidize the project for a considerable time after operations begin. A subsidy will be necessary until the projected design volume of 2,500,000 is achieved, at which time the projected unit cost will be $1.10. A basic determination which must be made is what price the systems will be charged for services, and on which of the various

levels of activity this price will be based.

On the assumption that it will be desirable to consider charging the lowest unit cost possible, the proposed sequence of phase-in of system technical services (Part IV) is based on bringing in the three New York City systems as quickly as possible in order to achieve this volume, since their combined volume is about 50% of the entire State based on 1969 data.

If any other strategy is adopted, this will probably require that the State subsidize the operation for a longer period of time than if the three city systems come in first.

It must be reiterated that the costs involved in getting to the pilot are relatively high. These costs, including the costs in the pilot year as follows:

| 1970 | 1971 | 1972 |
|---|---|---|
| $389,116. | $1,162,203. | $1,830,128 to 1,941,608* |

*depending on volume during pilot.

It would be unreasonable to attempt to incur such costs on the premise that commitments would be made by the systems to become ANYLTS' participants either during or subsequent to the pilot; these commitments must be made NOW. In our judgment there is no reason to doubt that what is proposed can be achieved. A great deal of sound planning has gone into this project. The only reason that it will not succeed will be due to a lack of funds.

Joseph Eisner, Director

II a) COSTS RELATED TO PROPOSED PHASE-IN BY SYSTEMS

12/01/69 ANYLTS UNIT COST PROJECTION

| ANNUAL NO. OF VOLUMES | | 80,000 | 375,000 | 1,000,000 | 1,500,000 | 2,300,000 | 2,500,000 |
|---|---|---|---|---|---|---|---|
| FIXED COSTS | DOLLARS | | | | | | |
| Building Rent @ 3.50/SQ FT | 175,000 | 9.6 % | 9.0 % | 8.0 % | 7.4 % | 6.5 % | 6.3 % |
| Building Maintenance | 45,000 | 2.5 % | 2.3 % | 2.1 % | 1.9 % | 1.7 % | 1.6 % |
| Telephone SVC | 40,000 | 2.2 % | 2.1 % | 1.8 % | 1.7 % | 1.5 % | 1.4 % |
| Electricity | 25,000 | 1.4 % | 1.3 % | 1.1 % | 1.1 % | .9 % | .9 % |
| Computer Rent - First Shift | 240,000 | 13.1 % | 12.4 % | 11.0 % | 10.1 % | 8.9 % | 8.7 % |
| NYPL SVC & Transmission | 75,000 | 4.1 % | 3.9 % | 3.4 % | 3.2 % | 2.8 % | 2.7 % |
| Traffic Consultant | 25,000 | 1.4 % | 1.3 % | 1.1 % | 1.1 % | .9 % | .9 % |
| Equipment Depreciation | 45,000 | 2.5 % | 2.3 % | 2.1 % | 1.9 % | 1.7 % | 1.6 % |
| Postage | 30,000 | 1.6 % | 1.5 % | 1.4 % | 1.3 % | 1.1 % | 1.1 % |
| Printing Repro & Mail SVC | 30,000 | 1.6 % | 1.5 % | 1.4 % | 1.3 % | 1.1 % | 1.1 % |
| Bowker & Other Subscriptions | 12,000 | .7 % | .6 % | .5 % | .5 % | .4 % | .4 % |
| Accounting and Auditing | 18,209 | 1.0 % | .9 % | .8 % | .8 % | .7 % | .7 % |
| Public Relations | 5,000 | .3 % | .2 % | .2 % | .2 % | .2 % | .2 % |
| Office Supplies | 15,000 | ,8 % | .8 % | .7 % | .6 % | .6 % | .5 % |
| Travel & Conference | 10,000 | .5 % | .5 % | .5 % | .4 % | .4 % | .4 % |
| EDP Supplies Depr & Rent | 15,000 | .8 % | .8 % | .7 % | .6 % | .6 % | .5 % |
| EDP Educ & Software Rental | 15,000 | .8 % | .8 % | .7 % | .6 % | .6 % | .5 % |
| Executive Staff | 105,279 | 5.8 % | 5.4 % | 4.8 % | 4.4 % | 3.9 % | 3.8 % |
| Adminstrative Staff | 113,000 | 6.2 % | 5.8 % | 5.2 % | 4.8 % | 4.2 % | 4.1 % |
| Secretarial | 78,000 | 4.3 % | 4.0 % | 3.6 % | 3.3 % | 2.9 % | 2.8 % |
| Cataloging Staff | 106,000 | 5.8 % | 5.5 % | 4.9 % | 4.5 % | 4.0 % | 3.8 % |
| Adminstrative Services | 30,490 | 1.7 % | 1.6 % | 1.4 % | 1.3 % | 1.1 % | 1.1 % |
| Invoice Section | 49,579 | 2.7 % | 2.6 % | 2.3 % | 2.1 % | 1.8 % | 1.8 % |
| Systems & Progrmg Maintenance | 89,173 | 4.9 % | 4.6 % | 4.1 % | 3.8 % | 3.3 % | 3.2 % |
| Addl Lib EDP System Developmn | 172,192 | 9.4 % | 8.9 % | 7.9 % | 7.2 % | 6.4 % | 6.2 % |
| Computer Operations Staff | 118,448 | 6.5 % | 6.1 % | 5.4 % | 5.0 % | 4.4 % | 4.3 % |
| Fixed Peripheral Optns Staff | 24,627 | 1.3 % | 1.3 % | 1.1 % | 1.0 % | .9 % | .9 % |
| Key Punch Supv. & Fixed K.P. | 92,380 | 5.0 % | 4.8 % | 4.2 % | 3.9 % | 3.4 % | 3.3 % |
| Total Fixed Costs | 1,799,377 | 98.3 % | 92.7 % | 82.4 % | 75.7 % | 67.1 % | 65.2 % |
| VARIABLE COSTS | | | | | | | |
| Input Control | DOLLARS | 622 | 3,060 | 8,270 | 12,405 | 19,021 | 20,675 |
| | PERCENT | | .2 % | .4 % | .5 % | .7 % | .7 % |
| Order Entry Lookup | DOLLARS | 1,544 | 7,141 | 19,300 | 28,950 | 44,390 | 48,250 |
| | PERCENT | .1 % | .4 % | .9 % | 1.2 % | 1.7 % | 1.7 % |
| Order Entry Key Input | DOLLARS | 1,687 | 7,803 | 21,090 | 31,635 | 48,507 | 52,725 |
| | PERCENT | .1 % | .4 % | 1.0 % | 1.3 % | 1.8 % | 1.9 % |
| Peripheral Machine Operations | DOLLARS | 800 | 3,700 | 10,000 | 15,000 | 23,000 | 25,000 |
| | PERCENT | | .2 % | .5 % | .6 % | .9 % | .9 % |
| Commercial Delivery Service | DOLLARS | 4,000 | 18,500 | 50,000 | 75,000 | 115,000 | 125,000 |
| | PERCENT | .2 % | 1.0 % | 2.3 % | 3.2 % | 4.3 % | 4.5 % |
| Unpacking & Checking Section | DOLLARS | 1,398 | 6,464 | 17,470 | 26,205 | 40,181 | 43,675 |
| | PERCENT | .1 % | .3 % | .8 % | 1.1 % | 1.5 % | 1.6 % |

II a) COSTS RELATED TO PROPOSED PHASE-IN BY SYSTEMS

12/01/69 ANYLTS UNIT COST PROJECTION

| | ANNUAL NO. OF VOLUMES | 80,000 | 375,000 | 1,000,000 | 1,500,000 | 2,300,000 | 2,500,000 |
|---|---|---|---|---|---|---|---|
| Labeling | Dollars | 1,598 | 7,389 | 19,970 | 29,955 | 45,931 | 49,925 |
| | Percent | .1 % | .4 % | .9 % | 1.3 % | 1.7 % | 1.8 % |
| Pasting | Dollars | 1,198 | 5,543 | 14,980 | 22,470 | 34,454 | 37,450 |
| | Percent | .1 % | .3 % | .7 % | .9 % | 1.3 % | 1.4 % |
| Covering | Dollars | 2,596 | 12,007 | 32,450 | 48,675 | 74,635 | 81,125 |
| | Percent | .1 % | .6 % | 1.5 % | 2.0 % | 2.8 % | 2.9 % |
| Cover Glueing | Dollars | 1,198 | 5,543 | 14,980 | 22,470 | 34,454 | 37,450 |
| | Percent | .1 % | .3 % | .7 % | .9 % | 1.3 % | 1.4 % |
| Library Sorting | Dollars | 998 | 4,618 | 12,480 | 18,720 | 28,704 | 31,200 |
| | Percent | .1 % | .2 % | .6 % | .8 % | 1.1 % | 1.1 % |
| Packing | Dollars | 998 | 4,618 | 12,480 | 18,720 | 28,704 | 31,200 |
| | Percent | .1 % | .2 % | .6 % | .8 % | 1.1 % | 1.1 % |
| Touch Labor Backup | Dollars | 2,396 | 11,082 | 29,950 | 44,925 | 68,885 | 74,875 |
| | Percent | .1 % | .6 % | 1.4 % | 1.9 % | 2.6 % | 2.7 % |
| Computer Rent-Second Shift | Dollars | 800 | 3,700 | 10,000 | 15,000 | 23,000 | 25,000 |
| | Percent | | .2 % | .5 % | .6 % | .9 % | .9 % |
| EDP Forms | Dollars | 1,280 | 5,920 | 16,000 | 24,000 | 36,800 | 40,000 |
| | Percent | .1 % | .3 % | .7 % | 1.0 % | 1.4 % | 1.4 % |
| Catalog Cards | Dollars | 2,000 | 9,250 | 25,000 | 37,500 | 57,500 | 62,500 |
| | Percent | .1 % | .5 % | 1.1 % | 1.6 % | 2.1 % | 2.3 % |
| Processing Materials | Dollars | 4,638 | 21,453 | 57,980 | 86,970 | 133,354 | 144,950 |
| | Percent | .3 % | 1.1 % | 2.7 % | 3.7 % | 5.0 % | 5.3 % |
| Union Catalog Microfilm Prod. | Dollars | 960 | 4,440 | 12,000 | 18,000 | 27,600 | 30,000 |
| | Percent | .1 % | .2 % | .5 % | .8 % | 1.0 % | 1.1 % |
| Total Variable Costs | Dollars | 30,751 | 142,231 | 384,400 | 576,600 | 884.120 | 961,000 |
| | Percent | 1.7 % | 7.3 % | 17.6 % | 24.3 % | 32.9 % | 34.8 % |
| Total Costs | Dollars | 1,830,128 | 1,941,608 | 2,183,777 | 2,375,977 | 2,683,497 | 2,760,377 |
| Unit Price = Tot-Cost / NO. of-Vols | | 22.88 | 5.18 | 2.18 | 1.58 | 1.17 | 1.10 |

II b) COSTS RELATED TO HYPOTHETICAL ACTIVITY LEVELS

11/26/69 A N Y L T S U N I T C O S T P R O J E C T I O N

| ANNUAL NO. of VOLUMES | | 350,000 | 7000,000 | 1,000,000 | 1,350,000 | 1,700,000 | 2,000 |
|---|---|---|---|---|---|---|---|
| FIXED COSTS | DOLLARS | | | | | | |
| Building Rent @3.50/sq. ft. | 175,000 | 9.0 % | 8.5 % | 8.0 % | 7.5 % | 7.1 % | 6.8 |
| Building Maintenance | 45,000 | 2.3 % | 2.2 % | 2.1 % | 1.9 % | 1.8 % | 1.8 |
| Telephone SVC | 40,000 | 2.1 % | 1.9 % | 1.8 % | 1.7 % | 1.6 % | 1.6 |
| Electricity | 25,000 | 1.3 % | 1.2 % | 1.1 % | 1.1 % | 1.0 % | 1.0 |
| Computer Rent-First Shift | 240,000 | 12.4 % | 11.6 % | 11.0 % | 10.4 % | 9.8 % | 9.3 |
| NYPL SVC & Transmission | 75,000 | 3.9 % | 3.6 % | 3.4 % | 3.2 % | 3.1 % | 2.9 |
| Traffic Consultant | 25,000 | 1.3 % | 1.2 % | 1.1 % | 1.1 % | 1.0 % | 1.0 |
| Equipment Depreciation | 45,000 | 2.3 % | 2.2 % | 2.1 % | 1.9 % | 1.8 % | 1.8 |
| Postage | 30,000 | 1.6 % | 1.5 % | 1.4 % | 1.3 % | 1.2 % | 1.2 |
| Printing Repro & Mail SVC | 30,000 | 1.6 % | 1.5 % | 1.4 % | 1.3 % | 1.2 % | 1.2 |
| Bowker & other Subscriptions | 12,000 | .6 % | .6 % | .5 % | .5 % | .5 % | .5 |
| Accounting and Auditing | 18,209 | .9 % | .9 % | .8 % | .8 % | .7 % | .7 |
| Public Relations | 5,000 | .3 % | .2 % | .2 % | .2 % | .2 % | .2 |
| Office Supplies | 15,000 | .8 % | .7 % | .7 % | .6 % | .6 % | .6 |
| Travel & Conference | 10,000 | .5 % | .5 % | .5 % | .4 % | .4 % | .4 |
| EDP Supplies Depr. & Rent | 15,000 | .8 % | .7 % | .7 % | .6 % | .6 % | .6 |
| EDP Educ & Software Rental | 15,000 | .8 % | .7 % | .7 % | .6 % | .6 % | .6 |
| Executive Staff | 105,279 | 5.4 % | 5.1 % | 4.8 % | 4.5 % | 4.3 % | 4.1 |
| Administrative Staff | 113,000 | 5.8 % | 5.5 % | 5.2 % | 4.9 % | 4.6 % | 4.4 |
| Secretarial | 78,000 | 4.0 % | 3.8 % | 3.6 % | 3.4 % | 3.2 % | 3.0 |
| Cataloging Staff | 106,000 | 5.5 % | 5.1 % | 4.9 % | 4.6 % | 4.3 % | 4.1 |
| Administrative Services | 30,490 | 1.6 % | 1.5 % | 1.4 % | 1.3 % | 1.2 % | 1.2 |
| Invoice Section | 49,579 | 2.6 % | 2.4 % | 2.3 % | 2.1 % | 2.0 % | 1.9 |
| Systems & Progrmg Maintenance | 89,173 | 4.6 % | 4.3 % | 4.1 % | 3.8 % | 3.6 % | 3.5 |
| Addl Lib FDP System Developmn | 172,192 | 8.9 % | 8.3 % | 7.9 % | 7.4 % | 7.0 % | 6.7 |
| Computer Operations Staff | 118,448 | 6.1 % | 5.7 % | 5.4 % | 5.1 % | 4.8 % | 4.6 |
| Fixed Peripheral Optns Staff | 24,627 | 1.3 % | 1.2 % | 1.1 % | 1.1 % | 1.0 % | 1.0 |
| Key Punch Supv & Fixed K.P. | 92,380 | 4.8 % | 4.5 % | 4.2 % | 4.0 % | 3.8 % | 3.6 |
| TOTAL FIXED COSTS | 1,799,377 | 93.0 % | 87.0 % | 82.4 % | 77.6 % | 73.4 % | 70.1 |
| VARIABLE COSTS | | | | | | | |
| Input Control | Dollars | 2,895 | 5,789 | 8,270 | 11,165 | 14,059 | 16,540 |
| | Percent | .1 % | .3 % | .4 % | .5 % | .6 % | .6 |
| Order Entry Lookup | Dollars | 6,755 | 13,510 | 19,300 | 26,055 | 32,810 | 38,600 |
| | Percent | .3 % | .7 % | .9 % | 1.1 % | 1.3 % | 1.5 |
| Order Entry Key Input | Dollars | 7,382 | 14,763 | 21,090 | 28,472 | 35,853 | 42,180 |
| | Percent | .4 % | .7 % | 1.0 % | 1.2 % | 1.5 % | 1.6 |
| Peripheral Machine Operations | Dollars | 3,500 | 7,000 | 10,000 | 13,500 | 17,000 | 20,000 |
| | Percent | .2 % | .3 % | .5 % | .6 % | .7 % | .8 |
| Commercial Delivery Service | Dollars | 17,500 | 35,000 | 50,000 | 67,500 | 85,000 | 100,00 |
| | Percent | .9 % | 1.7 % | 2.3 % | 2.9 % | 3.5 % | 3.9 |
| Unpacking & Checking Section | Dollars | 6,115 | 12,229 | 17,470 | 23,585 | 29,699 | 34,940 |
| | Percent | .3 % | .6 % | .8 % | 1.0 % | 1.2 % | 1.4 |

TICAL ACTIVITY LEVELS

PROJECTION

| | | | | | | |
|---|---|---|---|---|---|---|
| 00 | 1,350,000 | 1,700,000 | 2,000,000 | 2,350,000 | 2,700,000 | 3,000,000 |
| % | 7.5 % | 7.1 % | 6.8 % | 6.5 % | 6.2 % | 5.9 % |
| % | 1.9 % | 1.8 % | 1.8 % | 1.7 % | 1.6 % | 1.5 % |
| % | 1.7 % | 1.6 % | 1.6 % | 1.5 % | 1.4 % | 1.4 % |
| % | 1.1 % | 1.0 % | 1.0 % | .9 % | .9 % | .8 % |
| % | 10.4 % | 9.8 % | 9.3 % | 8.9 % | 8.5 % | 8.1 % |
| % | 3.2 % | 3.1 % | 2.9 % | 2.8 % | 2.6 % | 2.5 % |
| % | 1.1 % | 1.0 % | 1.0 % | .9 % | .9 % | .8 % |
| % | 1.9 % | 1.8 % | 1.8 % | 1.7 % | 1.6 % | 1.5 % |
| % | 1.3 % | 1.2 % | 1.2 % | 1.1 % | 1.1 % | 1.0 % |
| % | 1.3 % | 1.2 % | 1.2 % | 1.1 % | 1.1 % | 1.0 % |
| % | .5 % | .5 % | .5 % | .4 % | .4 % | .4 % |
| % | .8 % | .7 % | .7 % | .7 % | .6 % | .6 % |
| % | .2 % | .2 % | .2 % | .2 % | .2 % | .2 % |
| % | .6 % | .6 % | .6 % | .6 % | .5 % | .5 % |
| % | .4 % | .4 % | .4 % | .4 % | .4 % | .3 % |
| % | .6 % | .6 % | .6 % | .6 % | .5 % | .5 % |
| % | .6 % | .6 % | .6 % | .6 % | .5 % | .5 % |
| % | 4.5 % | 4.3 % | 4.1 % | 3.9 % | 3.7 % | 3.6 % |
| % | 4.9 % | 4.6 % | 4.4 % | 4.2 % | 4.0 % | 3.8 % |
| % | 3.4 % | 3.2 % | 3.0 % | 2.9 % | 2.7 % | 2.6 % |
| % | 4.6 % | 4.3 % | 4.1 % | 3.9 % | 3.7 % | 3.6 % |
| % | 1.3 % | 1.2 % | 1.2 % | 1.1 % | 1.1 % | 1.0 % |
| % | 2.1 % | 2.0 % | 1.9 % | 1.8 % | 1.7 % | 1.7 % |
| % | 3.8 % | 3.6 % | 3.5 % | 3.3 % | 3.1 % | 3.0 % |
| % | 7.4 % | 7.0 % | 6.7 % | 6.4 % | 6.1 % | 5.8 % |
| % | 5.1 % | 4.8 % | 4.6 % | 4.4 % | 4.2 % | 4.0 % |
| % | 1.1 % | 1.0 % | 1.0 % | .9 % | .9 % | .8 % |
| % | 4.0 % | 3.8 % | 3.6 % | 3.4 % | 3.3 % | 3.1 % |
| % | 77.6 % | 73.4 % | 70.1 % | 66.6 % | 63.4 % | 60.9 % |
| | 11,165 | 14,059 | 16,540 | 19,435 | 22,329 | 24,810 |
| % | .5 % | .6 % | .6 % | .7 % | .8 % | .8 % |
| | 26,055 | 32,810 | 38,600 | 45,355 | 52,110 | 57,900 |
| % | 1.1 % | 1.3 % | 1.5 % | 1.7 % | 1.8 % | 2.0 % |
| | 28,472 | 35,853 | 42,180 | 49,562 | 56,943 | 63,270 |
| % | 1.2 % | 1.5 % | 1.6 % | 1.8 % | 2.0 % | 2.1 % |
| 0 | 13,500 | 17,000 | 20,000 | 23,500 | 27,000 | 30,000 |
| % | .6 % | .7 % | .8 % | .9 % | 1.0 % | 1.0 % |
| 0 | 67,500 | 85,000 | 100,000 | 117,500 | 135,000 | 150,000 |
| % | 2.9 % | 3.5 % | 3.9 % | 4.3 % | 4.8 % | 5.1 % |
| 0 | 23,585 | 29,699 | 34,940 | 41,055 | 47,169 | 52,410 |
| % | 1.0 % | 1.2 % | 1.4 % | 1.5 % | 1.7 % | 1.8 % |

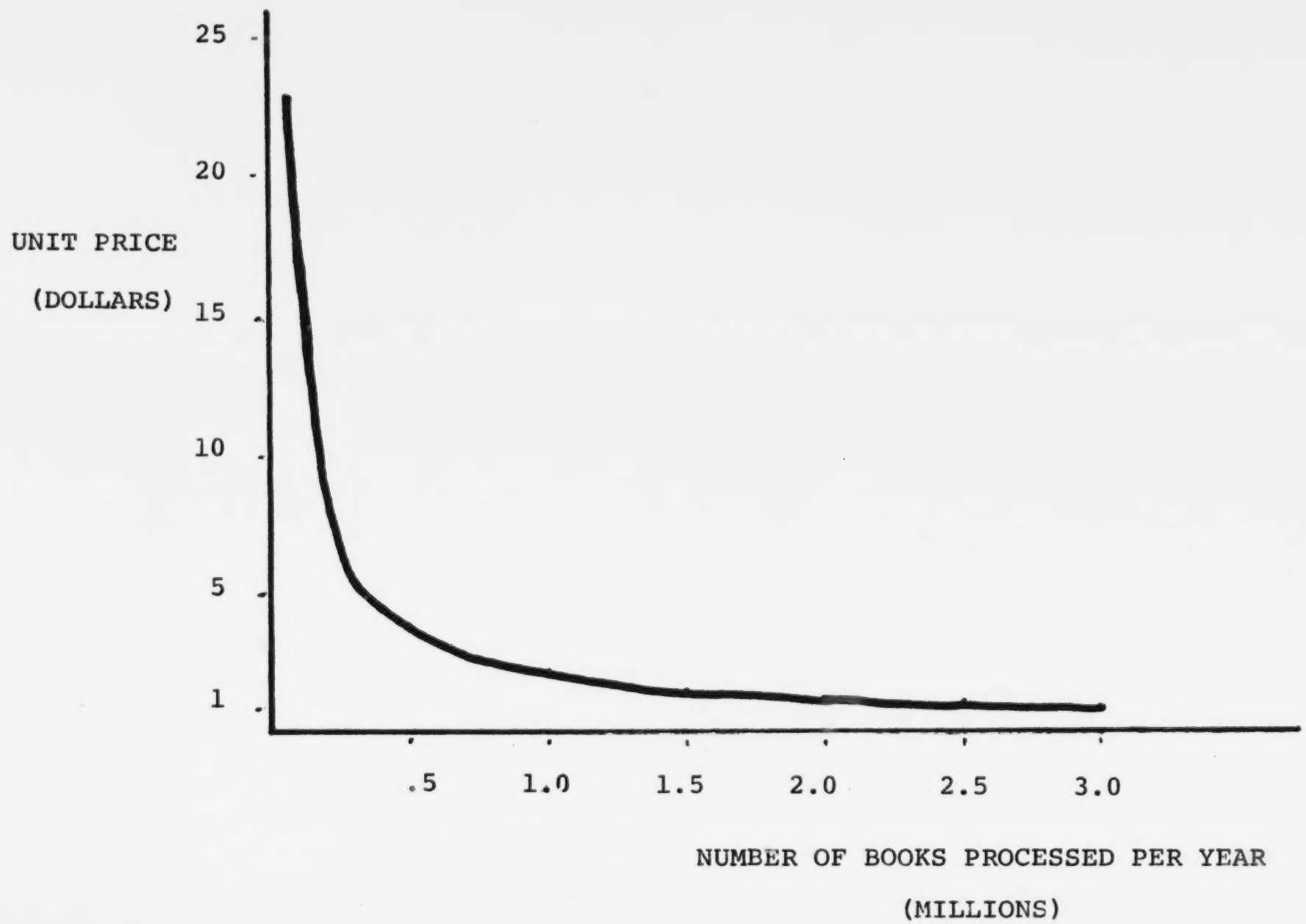
II b) COSTS RELATED TO HYPOTHETICAL ACTIVITY LEVELS

11/26/69 ANYLTS UNIT COST PROJECTION

| ANNUAL NO. OF VOLUMES | | 350,000 | 700,000 | 1,000,000 | 1,350,00 | 1,700, |
|---|---|---|---|---|---|---|
| LABELING | Dollars | 6,990 | 13,979 | 19,970 | 26,[illegible]0 | 33, |
| | Percent | .4 % | .7 % | .9 % | 1.[illegible] % | 1. |
| Pasting | Dollars | 5,243 | 10,486 | 14,980 | 20,[illegible]23 | 25, |
| | Percent | .3 % | .5 % | .7 % | .[illegible] % | 1. |
| Covering | Dollars | 11,358 | 22,715 | 32,450 | 43,[illegible]08 | 55, |
| | Percent | .6 % | 1.1 % | 1.5 % | 1.[illegible] % | 2. |
| Cover Glueing | Dollars | 5,234 | 10,486 | 14,980 | 20,[illegible]23 | 25, |
| | Percent | .3 % | .5 % | .7 % | .[illegible] % | 1. |
| Library Sorting | Dollars | 4,386 | 8,736 | 12,480 | 16,[illegible]48 | 21, |
| | Percent | .2 % | .4 % | .6 % | .[illegible] % | . |
| Packing | Dollars | 4,386 | 8,736 | 12,480 | 16,[illegible]48 | 21, |
| | Percent | .2 % | .4 % | .6 % | .[illegible] % | . |
| Touch Labor Backup | Dollars | 10,483 | 20,965 | 29,950 | 40,[illegible]33 | 50, |
| | Percent | .5 % | 1.1 % | 1.4 % | 1,[illegible] % | 2. |
| Computer Rent-Second Shift | Dollars | 3,500 | 7,000 | 10,000 | 13,[illegible]00 | 17, |
| | Percent | .2 % | .3 % | .5 % | .[illegible] % | . |
| EDP Forms | Dollars | 5,600 | 11,200 | 16,000 | 21,[illegible]00 | 27, |
| | Percent | .3 % | .5 % | .7 % | ,[illegible] % | 1. |
| Catalog Cards | Dollars | 8,750 | 17,500 | 25,000 | 33,750 | 42, |
| | Percent | .5 % | .8 % | 1.1 % | 1.5 % | 1. |
| Processing Materials | Dollars | 20,293 | 40,586 | 57,980 | 78,273 | 98, |
| | Percent | 1.0 % | 2.0 % | 2.7 % | 3.4 % | 4. |
| Union Catalog Microfilm Prod. | Dollars | 4,200 | 8,400 | 12,000 | 16,[illegible]00 | 20, |
| | Percent | .2 % | .4 % | .5 % | .[illegible] % | . |
| Total Variable Costs | Dollars | 134,543 | 269,080 | 384,400 | 518,[illegible]43 | 653, |
| | Percent | 7.0 % | 13.0 % | 17.6 % | 22.[illegible] % | 26. |
| Total Costs | Dollars | 1,933,920 | 2,068,457 | 2,183,777 | 2,318,[illegible]20 | 2,452 |
| Unit Price=Tot-Cost/NO.-of-Vols. | | 5.53 | 2.95 | 2.18 | 1.72 | 1 |

| | | | | | |
|---|---|---|---|---|---|
| 0,000 | 1,700,000 | 2,000,000 | 2,350,000 | 2,700,000 | 3,000,000 |
| 26,960<br>1.1 % | 33,949<br>1.4 % | 39,940<br>1.6 % | 46,930<br>1.7 % | 53,919<br>1.9 % | 59,910<br>2.0 % |
| 0,223<br>.9 % | 25,466<br>1.0 % | 29,960<br>1.2 % | 35,203<br>1.3 % | 40,446<br>1.4 % | 44,940<br>1.5 % |
| 3,808<br>1.9 % | 55,165<br>2.2 % | 64,900<br>2.5 % | 76,258<br>2.8 % | 87,615<br>3.1 % | 97,350<br>3.3 % |
| 0,223<br>.9 % | 25,466<br>1.0 % | 29,960<br>1.2 % | 35,203<br>1.3 % | 40,446<br>1.4 % | 44,940<br>1.5 % |
| 6,848<br>.7 % | 21,216<br>.9 % | 24,960<br>1.0 % | 29,328<br>1.1 % | 33,696<br>1.2 % | 37,440<br>1.3 % |
| 6,848<br>.7 % | 21,216<br>.9 % | 24,960<br>1.0 % | 29,328<br>1.1 % | 33,696<br>1.2 % | 37,440<br>1.3 % |
| 0,433<br>1,7 % | 50,915<br>2.1 % | 59,900<br>2.3 % | 70,383<br>2.6 % | 80,865<br>2.9 % | 89,850<br>3.0 % |
| 3,500<br>.6 % | 17,000<br>.7 % | 20,000<br>.8 % | 23,500<br>.9 % | 27,000<br>1.0 % | 30,000<br>1.0 % |
| 1,600<br>,9 % | 27,200<br>1.1 % | 32,000<br>1.2 % | 37,600<br>1.4 % | 43,200<br>1.5 % | 48,000<br>1.6 % |
| 3,750<br>1.5 % | 42,500<br>1.7 % | 50,000<br>1.9 % | 58,750<br>2.2 % | 67,500<br>2.4 % | 75,000<br>2.5 % |
| 8,273<br>3.4 % | 98,566<br>4.0 % | 115,960<br>4.5 % | 136,253<br>5.0 % | 156,546<br>5.5 % | 173,940<br>5.9 % |
| 6,200<br>.7 % | 20,400<br>.8 % | 24,000<br>.9 % | 28,200<br>1.0 % | 32,400<br>1.1 % | 36,000<br>1.2 % |
| 8,943<br>2.4 % | 653,480<br>26.6 % | 768,800<br>29.9 % | 903,343<br>33.4 % | 1,037,880<br>36.6 % | 1,153,200<br>39.1 % |
| 8,320 | 2,452,857 | 2,568,177 | 2,702,720 | 2,837,257 | 2,952,577 |
| 1.72 | 1.44 | 1.28 | 1.15 | 1.05 | .98 |

II c) UNIT COSTS AT DIFFERENT ACTIVITY LEVELS



## III. BACK-UP DATA ON WHICH UNIT COST PROJECTIONS ARE BASED

### A) FIXED COSTS

1) Building Rent @ 3.50/ Sq. Ft.

The report submitted by Drake Sheahan/Stewart Dougall called for 18,880 square feet for the processing, receiving, shipping and book storage areas. The mobile bin storage area based on the optimum cycle time as projected in Schedule B-II of their report is adequate. However, this area should be doubled and the number of mobile bins should be doubled to accomodate a possible backup or peak ordering periods. This additional space would increase this part of the building to 21,440 square feet.

At full operation, we estimate that we require 74 positions in addition to those outlined by Drake Sheahan. We assumed 120 square feet per person:

| | | | |
|---|---|---|---|
| 74 people @ 120 sq. ft. per person | 8,880 | | |
| 15% for aisles, storage and utilities | 1,300 | | |
| Computer room | 2,500 | | |
| Peripheral machine operation | 1,200 | | |
| Storage | 2,000 | | |
| Cafeteria | 1,000 | | |
| Meeting and conference rooms | 1,800 | | |
| Reception area | 600 | | |
| | | 19,280 | |
| Processing, receiving, shipping and book storage | | 21,440 | |
| Minimum building size | | | 40,720 sq.ft. |

We feel that a reasonable estimate which would take into account any unforseen space needs would be 50,000 square feet.

2) Building Maintenance

a) Contract Basis - the current rate appears to be about $ .90/sq. ft/year. 50,000 sq. ft. X $ .90 = $45,000

b) Alternate - have own staff perform custodial and maintenance services, assuming 1 full time worker per 10,000 - 12,500 sq. ft.

1 - Salaries

| | | | | Mid | +30% |
|---|---|---|---|---|---|
| Gr 8 | 1 | Bldg. Maint. Supv. | 6477 - 7898 | 7188 | 9,344 |
| Gr 6 | 1 | Custodian Supv. | 5703 - 6929 | 6315 | 8,209 |
| Gr 4 | 3 | Custodian Workers | 5057 - 6133 | 5595 | 21,819 |
| | | | | | 39,372 |

2 - Supplies

.09/sq. ft. X 50,000 sq. st. 4,500

3 - Snow Removal

$22.50/hr. X 50 hrs. 1,125

$44,997

3) Telephone Service

a) Basic Equipment Rental $364/mo. $4,368

300 Dial Comm Series console
with 10 trunks and 30 extensions
(including toll diversion feature)

| | |
|---|---|
| Console | $75/mo. |
| Trunk 1 | 12/mo. |
| Trunks 2-10 | 8.75 ea/mo. |
| Extensions 1-30 | 6.60 ea/mo. |

b) Message Unit Charges $469/mo. 5,628

c) Toll charges outside
N.Y. State 100/mo. 1,200

d) WATS line charges N.Y. State 28,800
In - WATS service - 2 lines
@ $650/mo. $15,600
Out- WATS service - 1 line
$650/mo. $ 7,800
Out- WATS service -
measured time $ 5,400
15 hrs/mo. $240 2,880
overtime @ $13.50/hr.
2,520

$39,984

4) Electricity

a) General - a 26,000 sq. ft. building having over 1,300 40 watt fixtures, and heavy air conditioning, in use 6 days a week for up to 15 hrs/day, has an annual electric bill of $3,000 for lights, and $4,000 for air conditioning. It is assumed a 50,000 sq. ft. building would require a two-fold increase in electricity, or $14,000
to which is added for contingency 8,000

b) Computer power requirements - assumes two 8 hour shifts 5 days a week for 52 weeks a year, or 4,160 hours. CPU requires 27.67 KVA, or 27,670 KW at commercial rate of .025/KWH, or .69/KWH X 4,160 hours = 3,000

$25,000

5) Computer Rent - First Shift

The recommended computer configuration rents for approximately $19,100 per month under the terms outlined in IBM's new pricing structure. We allowed for some additional computer equipment and estimated $20,000 per month or $240,000 per year.

6) NYPL Service Charge and Transmission Costs

Assuming that ANYLTS would pay for the magnetic tape to magnetic tape transmission equipment at both locations, and that we would pay for the line charges, the cost to ANYLTS for these items should not exceed $15,000 per year. We estimated $5,000 per month for our share of NYPL's operating expenses. At this time we cannot predict this cost with any greater degree of certainty, and feel the estimate is as realistic as can be expected without actual negotiation of transaction cost charges.

7) Traffic Consultant

The function of the traffic consultant is to:

a) audit the freight bills received from commercial trucking firms, to determine if billings were in accordance with N.Y. State Public Service Commission allowable tariff;
b) insure that shipments made by ANYLTS are paid for only once (double billings are quite common in the trucking industry);
c) insure against billings for shipments never made; and
d) check on lost shipments.

Based on anticipated freight costs of $125,000 annually at full operation, it is probable that approximately $2,000 per month is a reasonable estimate for this service.

8) Equipment Depreciation

Drake, Sheahan /Stewart Dougall indicated equipment costs of $221,000, to which we feel we must add $30,000 inasmuch as we are doubling the number of mobile storage bins. If we add $80,000 for the cost of other equipment not indicated in their report we must be prepared to depreciate approximately $330,000 of equipment over a 7-1/2 year period or $45,000 per annum. While the budgets of public agencies do not normally reflect depreciation of equipment as an operating expense, if ANYLTS is to be supported solely from fees derived from services provided to the systems, reflecting depreciation as an element of the cost will be the only way to accumulate funds for additional capital expenditures.

9) Postage Costs

| | |
|---|---|
| a) It is anticipated that one of the largest identifiable costs will be for mailing of the Status Reports. It is estimated that there will be 500,000 pages per year (average of 12 pgs/library/wk). Each report will weigh 2 oz. and cost .12. However, many reports may be shipped with books, so we estimate postage at | $7,500 |
| b) Regular Postage (correspondence, payment of bills, etc.) | 7,500 |
| c) Mailings of Books to libraries at Book Rate | 15,000 |
| | $30,000 |

10) Printing, Reproduction and Mail Services

This cost is primarily related to the production of Pre-Printed Book Order Forms which are keyed to various review media and system-issued book selection lists. (Forms referred to below as PPBO.)

a) Pages per year to be produced:

1) Kirkus Service

| | |
|---|---|
| 26 issues, 5,000 reviews, average 110 items/list, 20 items/page=5 PPBO pgs to be sent to 500 libraries | 65,000 |

2) LJ

| | |
|---|---|
| 23 issues, 9,000 reviews, average 400 items/list, 20 items/page=20 PPBO pgs to be sent to 500 libraries | 260,000 |

3) Booklist

| | |
|---|---|
| 24 issues, 3,300 reviews, average 140 items/list, 20 items/page=7 PPBO pgs to be sent to 750 libraries | 126,000 |

4) Choice

| | |
|---|---|
| 12 issues, 6,000 reviews, average 500 items/list, 20 items/page=25 PPBO pgs to be sent to 250 libraries | 750,000 |

5) System lists - excluding N.Y. City

| | |
|---|---|
| 19 systems, 1 list/mo, average 50 items/list, 20 items/page=3 PPBO pgs to be sent to 500 libraries | 370,500 |

6) N.Y. City Systems

| | |
|---|---|
| 3 systems, 1 list/wk, average 200 items/list, 20 items/page=10 PPBO pgs per system to be sent to 180 branches | 280,800 |

7) System replacement lists

| | |
|---|---|
| 22 systems, 6 lists/yr, average 1,000 items/list, 20 items/page=50 PPBO pgs per system to be sent to 1,000 libraries | 330,000 |
| | 2,182,000 |

b) Salaries

| | | | | Mid | +30% |
|---|---|---|---|---|---|
| Gr 8 1 Dupli Mach Sup | 6477 | - | 7898 | 7188 | 9,344 |
| Gr 6 1 Dupli Mach Op II | 5703 | - | 6929 | 6315 | 8,209 |
| Gr 4 1 Dupli Mach Op I | 5057 | - | 6133 | 5595 | 7,273 |
| | | | | | 24,826 |

c) Supplies

| | |
|---|---|
| 2,182,000 pgs ÷ 500 = 4,364 reams @ $1.20 (costs of ink and mats are included in Office Supplies) | 5,236 |
| | 30,062 |

Note: to do above work on outside contract basis would probably cost in excess of $50,000 per year.

11) Bowker & Other Subscriptions

R. R. Bowker's representatives have indicated that an annual subscription to their updating service on magnetic tape will be approximately $6,000 per year. To this amount we have added $6,000 for subscriptions to other services.

12) Accounting & Auditing

The estimated cost of an auditing service is $10,000 per year to which we have added $8,209 (the annual cost in salary and fringe benefits for a financial clerk), salary range $5,703-$6,929, with mid-point salary of $6,315 plus 30% fringe benefits).

13) Public Relations

This cost is related to the fee for the preparation of copy for the newsletters and any additional public relations material that is produced for us on a consulting basis.

14) Office Supplies

We have estimated $15,000 per year for common office supplies such as paper, pencils, typewriter ribbons etc.

15) Travel & Conference

We estimate $10,000 per year

16) EDP Supplies,Depreciation & Rental

This includes the cost of printer ribbons, depreciation of magnetic tapes, disk rental or depreciation, and other minor supplies.

17) EDP Education & Software Rental

We estimate that a maximum of $15,000 per year will be required to pay for IBM education which is no longer provided free, and for the rental of that IBM and competitive software which was free before the IBM pricing changes.

18) Executive Staff

This category includes the salaries and fringe benefits of the Director, Deputy Director of EDP, Deputy Director of Technical Services and Deputy Director of Finance as projected for 1970. See Part VI A for itemization of these salaries.

19) Administrative Staff

This category includes the salaries and fringe benefits of the following:

| | | | Mid | +30% |
|---|---|---|---|---|
| Gr 17 | 1 Chief Admin Svcs Sect | 13,655 - 16,941 | 15,298 | 20,000 |
| Gr 17 | 1 Chief Finance | 13,655 - 16,941 | 15,298 | 20,000 |
| Gr 14 | 1 Chief Processing | 10,461 - 12,960 | 11,710 | 15,200 |
| Gr 12 | 1 Personnel Officer | 8,771 - 10,877 | 9,824 | 12,800 |
| Gr 11 | 1 Ass't. Chief Proc. | 8,091 - 9,999 | 9,026 | 11,700 |
| Gr 11 | 1 Chief Shipping | 8,091 - 9,999 | 9,026 | 11,700 |
| Gr 10 | 1 Purchasing Agent | 7,489 - 9,188 | 8,318 | 10,800 |
| Gr 10 | 1 Mail Room Supv. | 7,489 - 9,188 | 8,318 | 10,800 |

20) Secretarial

This category includes the salaries and fringe benefits of the following:

| | | | | |
|---|---|---|---|---|
| Gr 8 | 8 Secretaries | 6,438 - 8,228 | 7,512 | 78,000 |

It is assumed there is one secretary for each of the 4 executive positions, one secretary assigned to the Finance and Accounting Verification Section, and 3 to the Administrative Services Section.

21) Cataloging Staff

This includes the salaries and fringe benefits of the following:

| | | | |
|---|---|---|---|
| 1 Chief Cataloger | 13,389 - 17,403 | 15,795 | 20,500 |
| 5 Catalogers | 11,233 - 14,599 | 13,252 | 86,175 |

22) Administrative Services

This category includes payment for preparation of payroll by outside service at yearly cost of 9,000

and

| | | | | |
|---|---|---|---|---|
| Gr 5 | 1 Switchboard Op | 5380 - 6520 | 5950 | 7,700 |
| Gr 3 | 2 Mail Clerks | 4798 - 5810 | 5304 | 13,790 |

23) Invoice Section

Assumptions

a) At 2,500,000 volumes per year, 6,000 line items per day will appear on vendor's invoices for which we will have to retrieve a card and transcribe information from the invoice to the card. The cards will be filed by purchase order no. and no single card refiling will ever be necessary for partial shipments, inasmuch as a brand new deck for the partially filled order will be punched out on the computer. This new deck will replace the original one in the file.

b) The cards will be punched out by the computer in title sequence within a purchase order.

c) The clerks will work from the invoice to the cards and retrieve them at a rate of 1 every 10 seconds.

d) The discount, extension, quantity received, and bin location number will be transcribed onto the card from the invoice at the rate of 1 every 10 seconds.

Estimate:

Six clerks will be required to retrieve transcribe, and batch file cards.
1 senior clerk will be required to resolve discrepencies appearing on the invoice error list generated by the computer.

Total staff:*

| | | | Mid | +30% |
|---|---|---|---|---|
| Gr 6 | 1 Senior Clerk | 5703 - 6929 | 6315 | 8,209 |
| Gr 3 | 6 Clerks | 4798 - 5810 | 5304 | 41,370 |
| | | | | 49,579 |

*Note: This fixed cost will certainly be considerably lower during the pilot operation. However, it is considered a fixed cost inasmuch as the number of items received daily should not vary greatly once we approach and exceed a volume of 1,000,000 books per year. Drake Sheehan estimated 3,000 items per day at full volume. We have doubled that estimate in an effort to derive a maximum cost for this operation. This is in line with the general concept of these projections, which is to over rather than under estimate.

24) Systems & Programming Maintenance

This category includes the salaries and fringe benefits of the personnel required to make necessary changes to the total EDP system to meet any new requirements of the libraries, and to make those changes which will increase efficiency leading to better service and/or operating economies. We estimate that this staff will consist of 1 project leader, 1 systems analyst, 1 senior programmer and 2 programmers.

25) Additional Library EDP System Development

This fixed cost includes the salaries of the remainder of the EDP developmental staff that would be required as outlined in the Systems and Programming Personnel Schedule. This assumes that the staff would be maintained to work on new applications.

26) Computer Operations Staff

This consists of the salaries and fringe benefits for:

| | | | | Mid | +30% |
|---|---|---|---|---|---|
| | 1 | Comp.Op.Mgr. | 14,700 - 18,702 | 17,100 | 22,230 |
| | 2 | Shift Sup | 11,000 - 14,600 | 13,160 | 34,200 |
| Gr 12 | 2 | Sr.Op. | 8,771 - 10,877 | 9,824 | 25,542 |
| Gr 9 | 2 | Op. | 6,951 - 8,479 | 7,715 | 20,058 |
| Gr 6 | 1 | Tape Lib. | 5,703 - 6,929 | 6,315 | 16,418 |

27) Fixed Peripheral Operations Staff

The category of peripheral operations has been divided into fixed and variable. These are the personnel required to operate such equipment as bursters, decollators, cutting and forms slicing machines, etc. They will also be involved in report finishing. We estimate that we will require 3 people almost immediately for this work:

| | | | | Mid | +30% |
|---|---|---|---|---|---|
| Gr 6 | 3 | Machine Ops. | 5703 - 6929 | 6315 | 24,627 |

We estimate that as processing volume increases beyond 500,000 - 1,000,000, another 3 people would be required. Their salaries are included in the Variable Costs section following.

28) Keypunch Supervision and Fixed Keypunch Costs

1. File Maintenance - Order Master File, Library Fund File etc.

   1 operator should be able to handle this work inasmuch as a great majority of the Order Master changes, deletions and additions will be obtained on magnetic tape.

2. Catalog Worksheet Input - Five catalogers completing 30 worksheets per day which average 300 characters per work sheet will produce 45,000 key strokes per day. They can be punched and verified by 2.5 operators at a rate of 6,000 key strokes per hour.

3. 1 key punch operator will be required for the punching of new programs and program changes.

4. Receiving Cards - 6,000/day X 16 k s/card
   96,000 k s/day @ 7,000 per hr. equals
   2.3 operators.

   3 operators should be sufficient to do this work including error correction.

28) Keypunch Supervision and Fixed Keypunch Costs (Cont'd.)

a) Salaries

| | | | Mid | +30% |
|---|---|---|---|---|
| Gr 12 | 1 Key Punch Supv. | 8771 - 10,877 | 9824 | 12,700 |
| Gr 8 | 7.5 Key Punch Op. | 6477 - 7,898 | 7188 | 70,080 |
| | | | | 82,780 |

b) Equipment

| | |
|---|---|
| 8 Key Punch Machines @ $1200/yr. | 9,600 |
| | 92,380 |

B) VARIABLE COSTS

29) Input Control

This section will be responsible for the daily batch control of all library order forms. They will:

1) generate manual batch controls including hash totals on certain fields on the order forms;
2) maintain daily logs of all incoming orders and orders going to the key input section;
3) generate batch control card information, which will be used to balance the input batches on the computer;
4) review daily input error lists generated by the computer and use the source documents to correct those order entries in error;
5) maintain logs for error batches so that tight control of all order entry information will be maintained. This control section is essential to avoid lost orders and duplicate orders.

Previous experience with this type of operation has been used to estimate the need for 3 clerks in addition to a supervisor to handle approximately 2,500,000 orders per year:

| | | | | +30% |
|---|---|---|---|---|
| Gr 3 | 3 Clerks | 4798 - 5810 | 5304 | 20,685 |

$$\frac{20,685}{25} = \$827 \text{ per } 100,000 \text{ volumes}$$

30) Order Entry Lookup

Assumptions

a) 400,000 of the assumed 2,500,000 orders will not bear an SBN and will require lookup and possible SBN assignment. (approx. 2,000 per day)

b) The non SBN order forms (1 item per form)will be block sorted and looked up on microfilm record of ANYLTS assigned numbers.

30) Order Entry Lookup

Assumptions (Cont'd.)

c) 1 clerk (perhaps with the aid of a block sorting device) can block sort 2,000 per day on the first character of the title.

d) The lookup clerks can lookup and assign SBN's at the rate of 2 per minute.

Estimate

$$\frac{2000 \text{ per day}}{2 \text{ per minute}} = 1{,}000 \text{ minutes}$$

$$\frac{1000 \text{ minutes}}{360 \text{ minutes/per clerk}} = 2.8 \text{ clerks}$$

3 clerks for full volume
1 clerk for block sort

e) 500 of the 2,000 items will not be found on the microfilm either because SBN's or ABN's (ANYLTS Substitute Number) have been assigned subsequent to the time the microfilm was updated or a number has not yet been assigned.

f) One clerical will search for and assign numbers to the order form from the daily listing of newly assigned SBN's and ABN's at the rate of 45 seconds per lookup.

g) 100 of the 500 not found on microfilm will not be found on the daily listing. These will be fine sorted on title and after bibliographic search and verification, ABN or SBN assignment will be made, and a Master File Maintenance form for the title will be filled out.

Estimate: 1 clerk for lookup on daily list
2 clerks will search and verify

Total personnel required at full volume:

| | | | Mid | +30% |
|---|---|---|---|---|
| Gr 3 | 7 Clerks | 4798 - 5810 | 5304 | 48,265 |

$$\frac{48{,}265}{25} = \$1{,}930 \text{ per } 100{,}000 \text{ volumes}$$

Note: this section will be supervised by Chief Cataloger whose salary is included in the Fixed Costs preceding.

31) Order Entry Key Input

Assumptions

a) All library orders are for 1 copy.

2,500,000 volumes = 2,500,000 orders to be keypunched

b) The average number of key strokes per order line will be 15:

| | # of key strokes |
|---|---|
| duplicate page number | 1.0 |
| duplicate dates | 1.0 |
| Permabind option | 0.1 |
| Fund Code | 0.4 |
| Coll Code | 0.1 |
| Additional Catalog Cards | 0.3 |
| Proc Code | 0.1 |
| Quantity | 1.0 |
| Line # | 2.0 |
| SBN | 9.0 |
| | 15.0 k.s. |

15 k.s. X 2,500,000 lines = 37,500,00 k.s.

c) The salary schedule we are projecting should allow us to expect at least 7,500 k.s. per hour from our operators.

| | | | Mid | +30% |
|---|---|---|---|---|
| Salary range: | Gr. 8 | 6477 - 7898 | 7188 | 9344 |

d) An operator can be expected to work 214 days per year and six productive hours per day.

Estimate

6 hours X 7500 k.s. X 214 days = 9,630,000 k.s./yr.

$$\frac{37,500,000 \text{ k.s.}}{9,630,000} = 3.9 \text{ or } 4 \text{ key punch operators}$$

We will assume 1 additional operator will be required for error correction and order adjustment and cancellations. Total key punch staff required will be 5.

a) Salaries

| | | | Mid | +30% |
|---|---|---|---|---|
| Gr 8 | 5 Key Punch Op. | 6477 - 7898 | 7188 | 46,720 |

b) Equipment

| | |
|---|---|
| 5 Key input devices @ $100/mo. | 6,000 |
| | $52,720 |

$$\frac{52,720}{25} = \$2,109 \text{ per } 100,000 \text{ volumes}$$

32) Peripheral Machine Operations

We estimate 3 operators as described under item 27 above.

33) Commercial Delivery Service

The report submitted to us as a result of the completed traffic study indicated an annual cost of approximately $95,000 per year if we were to locate 1 processing center in Garden City. We have added $30,000 per year to that estimate.

$$\frac{\$125,000/\text{yr.}}{25} = \$5,000 \text{ per } 100,000 \text{ volumes}$$

NOTE: The manning information for the following 8 categories (34 - 41) is derived from the Drake Sheehan report, Schedule H-I. For their salaries of $10,000 based on Design Year 1976, we have substituted $6,240 for Design Year 1970. This is figured on a range of 4300 - 5200 with a midpoint salary of $4,800 + 30% fringe benefits.

34) Unpacking, Checking & Storing

7 men @ $6,240 = $43,680

$$\frac{\$43,680}{25} = \$1,747 \text{ per } 100,000 \text{ volumes}$$

35) Labeling

8 men @ $6,240 = $49,920

$$\frac{\$49,920}{25} = \$1,997 \text{ per } 100,000 \text{ volumes}$$

36) Pasting

6 men @ $6,240 = $37,440

$$\frac{\$37,440}{25} = \$1,498 \text{ per } 100,000 \text{ volumes}$$

37) Covering

13 men @ $6,240 = $81,120

$$\frac{\$81,120}{25} = \$3,245 \text{ per } 100,000 \text{ volumes}$$

38) Cover Glueing

6 men @ $6,240 = $37,440

$$\frac{\$37,440}{25} = \$1,498 \text{ per } 100,000 \text{ volumes}$$

39) Library Sorting

5 men @ $6,240 = $31,200

$\frac{\$31,200}{25}$ = $1,248 per 100,000 per volumes

40) Packing

5 men @ $6,240 = $31,200

$\frac{\$31,200}{25}$ = $1,248 per 100,000 volumes

41) Touch Labor Backup

12 men @ $6,240 = $74,880

$\frac{\$74,880}{25}$ = $2.995 per 100,000 volumes

42) Computer Rent - Second Shift

This is estimated at 10% of the first shift rental or approximately $25,000 per year

$\frac{\$25,000}{25}$ = $1,000 per 100,000 volumes

43) EDP Forms

We estimate that $40,000 per year will be spent on all EDP forms. These forms do not include the cost of catalog cards and other processing materials.

$\frac{\$40,000}{25}$ = $1,600 per 100,000 volumes

44) Catalog Cards

We feel that $5.00 per thousand for continuous form-catalog cards is a realistic price based on information submitted by various forms manufacturers

Assuming an average of 5 cards per book, including fiction and non fiction we can calculate the cost per 100,000 volumes.

$\frac{\text{100,000 volumes x 5 cards}}{\text{\$5.00 per thousand cards}}$ = $2,500 per 100,000 vol

45) Processing Materials

| Assumed Costs | $ per thousand books |
|---|---|
| a) Book Pockets | $ 5.24 |
| b) Book Cards | 2.74 |
| c) Labels | 5.00 |
| d) Plastic Book Jackets | 45.00 |
| Total | $57.98 |

or $5,798 per 100,000 volumes

Note: cost of catalog cards is included in preceding category.

46) Union Catalog Microfilm Production

a) System Union Catalogs

At full volume, it is assumed that 150,000 entries per month per system will have to be microfilmed for each system. At 20 titles per frame, each system will require 7,500 frames per month.

22 X 12 X 7500 = 1,980,000

Cost per frame .01

$19,800

b) Cartridge Purchase and Loadings

| | |
|---|---|
| 1 - each of the 22 systems requires 4 cartridges per month. To allow for turn-around time, an initial purchase of 3 times the number of reusable cartridges required each month at $2.00 each (22x4x3) | 528 |
| 2 - a charge of .75/cartridge is made for reloading (12x22x4) | 792 |
| c) Shipping via 1st class mail | 175 |
| d) ANYLTS alpha microfilm file | 1,200 |
| | 22,495 |
| To allow for underestimates or increase in prices, a contingency has been added to above figure of | 7,500 |
| | $30,000 |

$\frac{\$30,000}{25}$ = $1,200/100,000 volumes

## IV. PROPOSED OPERATIONAL PHASE-IN SCHEDULE OF SYSTEM TECHNICAL SERVICES

This timetable assumes commencement of a pilot operation in January, 1972 with completion by June 30, 1972.

During the first four months of this period it is assumed the pilot will be conducted with not more than five agencies of the pilot system. Thirty thousand orders will be handled. For the last two months of the pilot, the orders for the remainder of the agencies of that system will be handled. During this two-month period it is assumed that approximately 50,000 orders will be processed. For the entire six-month period a total of 80,000 orders are presumed.

### YEAR 1972

| | |
|---|---|
| Orders of agencies of pilot system as described above - (Brooklyn) | 80,000± |
| Beginning July 1st - half of orders of all agencies of pilot system | 150,000 |
| Beginning July 1st - half of orders of second system (Queens) | 145,000 |
| | 375,000 |

### YEAR 1973

| | |
|---|---|
| All orders of previous two systems for entire year | 583,000 |
| Orders of third system for entire year (NYPL) | 380,000 |
| Beginning July 1st - half of orders of fourth system (Buffalo) | 100,000 |
| | 1,063,000 |

### YEAR 1974

| | |
|---|---|
| All orders of previous four systems for entire year | 1,163,000 |
| Orders of fifth system for entire year (Nassau) | 280,000 |
| Beginning July 1st - half of orders of sixth system (Suffolk) | 140,000 |
| | 1,583,000 |

### YEAR 1975

| | |
|---|---|
| Orders of previous six systems for entire year | 1,723,000 |
| 1/2 of remaining systems for full year | 400,000± |
| Beginning July 1st, remainder of systems | 200,000± |
| | 2,323,000 |

### YEAR 1976

| | |
|---|---|
| Full State-wide operation | 2,523,000 |

NOTE: The above volume figures for the systems were derived from statistical data reported to ANYLTS for 1968 or 1968-69.

| | 1968-9 | |
|---|---|---|
| Brooklyn | 298,882 | |
| NYPL Br. | 379,202 | |
| Queens | 283,130 | |
| | 961,214 | |
| | | 961,214 |
| Nassau | 278,306 | |
| Suffolk | 288,646 | |
| Westchester | 137,471 | |
| | 704,423 | |
| | | 704,423 |
| Rochester | 127,058 | |
| Buffalo | 199,329 | |
| | 326,387 | |
| | | 326,387 |
| | | 1,992,024 |

## V. ESTIMATED COMPUTER PRINT TIME

In order to estimate an average daily computer print load at full operational volume, it must be born in mind that a small percentage of the printed products of the proposed system constitute over 80% of the system's total printing requirements. Printouts are as follows:

1) Library Invoices:

Assumptions: a) 11,500 line items per day
b) 1,000 invoices per day
c) 10 heading and total lines per invoice

1,000 x 10 = 10,000 heading lines
+ 11,500 line items
21,500 lines per day

$$\frac{\text{21,500 lines per day}}{\text{60,000 lines per hour}} = \text{0.35 hours per day}$$

| | |
|---|---|
| Print time | 0.35 hours per day |
| Set up | 0.15 " " " |
| Invoice Run = | 0.50 hours per day |

2) Library Status Report

Assumptions: a) The average length of time an order will remain on the status report will be two months.

b) Each outstanding order will require 1 line on the status report.

c) 40 items will be printed on each page of the status report.

d) 2,800 books per year are ordered by the average library.

e) Each page of the status report will require two lines of heading information.

$$\frac{\text{2,800 books per year}}{\text{6 two month periods per yr.}} = \text{467 items per status report}$$

$$\frac{\text{467 items}}{\text{40 items per page}} = \text{12 pages x 2 lines of headings} = \text{24 lines}$$

24 lines x 1,000 libraries = 24,000 lines of headings
467 items x 1,000 libraries = 467,000 lines
491,000 lines per week

$$\frac{\text{491,000 lines per wk}}{\text{60,000 lines per hour}} = \text{8.1 hours/week}$$

Since we will stagger the production of status reports so that we can spread the printing over five days, the average time per day will be 1.6 hours.

3) System Status Report

In order to estimate the absolute maximum print time for this report, we can assume that there will be no common titles ordered within a system during the assumed 2-month activity period. Therefore, at the very worst, the print time will be 1.6 hours per day.

4) Calculation of Computer-Printed Catalog Card Output Speed

1.) Planning Factors:

A. Number of Books Processed Per Year 2,800,000

1. Fiction (25%) 700,000
   a. Main Entry 5 lines
   b. Title 3 lines
   c. Shelf-list 5 lines

2. Non Fiction (75%) 2,100,000
   a. Main Entry 11 lines
   b. Title 3 lines
   c. Added Entry 4 lines
   d. 2nd Added Entry 4 lines
   e. Shelf-list 7 lines

B. Number of Cards Per Year

| | | | |
|---|---|---|---|
| 1. Fiction | 700,000 x 3 = | 2.1 Million | |
| 2. Non-Fiction | 2,100,000 x 5 = | 10.5 Million | |
| | Total | 12.6 Million | Cards/year |

FICTION

| Type | No. Cards | No. Lines | Total Lines | Speed @ LPM | Hours | |
|---|---|---|---|---|---|---|
| 1. Main Entry | 700,000 | 5 | 3,500,000 | 695 | 83 | |
| 2. Title | 700,000 | 3 | 2,100,000 | 624 | 57 | |
| 3. Shelf-List | 700,000 | 6 | 4,200,000 | 695 | 100 | 240 |

NON-FICTION

| | | | | | | |
|---|---|---|---|---|---|---|
| 1. Main Entry | 2,100,000 | 11 | 23,100,000 | 706 | 545 | |
| 2. Title | " | 3 | 6,300,000 | 560 | 187 | |
| 3. 1st Added Entry | " | | 8,400,000 | 682 | 205 | |
| 4. 2nd Added Entry | " | 4 | 8,400,000 | 682 | 205 | |
| 5. Shelf-List | " | 7 | 14,700,000 | 712 | 350 | 1,492 |
| | | | Total | Hours/Year | | 1,732 |
| | | | | Hours/Month | | 145 |
| | | | | Hours/Day | | 7.1 |

Adjustment for calculating speed at two-up assumes following random layout, producing least efficient combination of card-type combinations:

| Left-Hand Form | | Right-Hand Form | | Combination of L/R |
|---|---|---|---|---|
| 1. Main Entry | 11 lines | Shelf | 7 lines | *9.5 |
| 2. Short Card | 4 | Main Entry | 11 | *9.5 |
| 3. Short Card | 4 | Short Card | 4 | 4.0 |
| 4. Shelf | 7 | Short Card | 4 | 7.0 |
| 5. Main Entry | 11 | Short Card | 4 | *9.5 |
| 6. Short Card | 4 | Shelf | 7 | 7.0 |
| 7. Short Card | 4 | Main Entry | 11 | *9.5 |
| 8. Shelf | 7 | Short Card | 4 | 7.0 |
| | 52 | | 52 | 63.0 |

* Weighted average no. of lines per Main Entry based on Fiction (25%, 5 lines) and Non-Fixtion (75%, 11 lines)

63 ÷ 104 = 60%

Therefore,

| | One-up | Two-up |
|---|---|---|
| Hours/Year | 1,732 | 1,039 |
| Hours/Month | 145 | 87 |
| Hours/Day | 7.1 | 4.3 |

5) Processing Materials

If we estimate on the slowest method of production for pockets, book cards and spine label (the combined continuous 2-up form), we can calculate as follows:

$$\frac{\text{11 print lines per book}}{\text{2-up form}} = \text{5 1/2 print lines per book}$$

5 1/2 lines x 11,500 books per day = 63,250 lines per day

$$\frac{\text{63,250 lines per day}}{\text{60,000 lines per minute}} = \text{1.05 hours}$$

set up time 0.25 hours

1.30 hours per day

6) The remainder of the print time includes library statements, pre-printed book order forms, purchase orders, follow-up notices to vendors, internal reports and miscellaneous printing. This work should not exceed 2.0 hours per day.

Summary

| | Hours per day |
|---|---|
| 1) Invoices | 0.5 |
| 2) Library Status Report | 1.6 |
| 3) System Status Report | 1.6 |
| 4) Catalog Cards | 4.3 |
| 5) Processing Materials | 1.3 |
| 6) Other printing | 2.0 |
| Total | 11.3 |

The 11.3 hours of printing would be divided between 2 line printers for an average of 5.65 hours per printer.

## VI. BUDGETARY REQUIREMENTS TO REACH PILOT STAGE

### A) DEVELOPMENTAL COST PROJECTIONS, 1970-1971

Based on system design work done to date, it is estimated that 22 man years of further developmental work are required to be accomplished. Further system design and programming will require 18 months if the number of personnel shown on the appended "Systems and Programming Personnel Schedule" can be hired.

It should be noted that if all the personnel contemplated were added in 1970, the present office will not be large enough to accommodate the staff. Unless additional space is available, it may be necessary to make an intermediate move prior to relocation to the final site at which the computer will be located. An intermediate move may not be accomplished easily, due to the difficulty involved in renting space on a short-term basis.

An additional three months will be required for a continuity test prior to the pilot. Thus, the pilot could begin 21 months subsequent to an assurance of funding at the requisite level in accordance with the following requirements (arranged in format of LSCA budget application):

I-A, B, IV-C - SALARIES AND FRINGE BENEFITS

| STAFF NOW EMPLOYED | 1970 | 1971 |
|---|---|---|
| Director | $22,790. | $23,850. |
| Deputy Director EDP | 20,034 | 20,988 |
| Mgr. Systems & Prog. | --- | 18,056 |
| Project Leader 1 | 17,375 | --- |
| Project Leader 2 | 16,136 | 16,911 |
| Project Leader 3 | 16,136 | 16,911 |
| Systems Programmer | 15,603 | 16,366 |
| Systems Analyst 1 | 15,603 | 16,366 |
| Secretary | 7,583 | 7,962 |
| Clerk 1 | 4,250 | 4,500 |
| Total Salaries | 135,510 | 141,910 |
| +30% Fringe Benefits | 40,653 | 42,573 |
| | 176,163 | 184,483 |

| STAFF TO BE ADDED | | |
|---|---|---|
| a) Developmental* | | |
| Deputy Dir. Tech. Serv. (8 mos. 1970) | 14,310 | 20,034 |
| Deputy Dir. Bus. Serv. (3 mos, 1970) | 4,770 | 19,343 |
| Systems Analyst 2 | 8,316 | 14,694 |
| Systems Analyst 3 | 8,316 | 14,694 |
| Senior Programmer 1 | 10,112 | 14,055 |
| Senior Programmer 2 | 10,112 | 14,055 |
| Senior Programmer 3 | 10,112 | 14,055 |

| STAFF TO BE ADDED | 1970 | 1971 |
|---|---|---|
| a) Developmental* (continued) | | |
| Programmer 1 | 6,455 | 11,431 |
| Programmer 2 | 6,455 | 11,431 |
| Programmer 3 | 6,455 | 11,431 |
| Clerk 2 - (9 months 1970) | 3,600 | 4,980 |
| Clerk 3 - (6 months 1970) | 2,400 | 4,925 |
| Total | $91,413 | $155,128 |
| +30% Fringe Benefits | 36,565 | 46,538 |
| | $127,978 | $201,666 |

*See Exhibit VI-a for length of employment of all EDP positions listed here.

| | | |
|---|---|---|
| b) Operations | | |
| Computer Operations Mgr. | | 11,286 |
| Computer Operator 1 (6 months) | 4,912 | 9,824 |
| Computer Operator 2 | | 4,912 |
| Key Punch Operator 1 | | 7,188 |
| Total | 4,912 | 33,210 |
| +30% Fringe Benefits | 1,473 | 9,963 |
| | 6,385 | 43,173 |
| Total Staff Costs in Budget Year | $310,526 | $429,322 |
| Total Staff Costs 1970-1971 | | $739,848 |
| II. LIBRARY MATERIALS | 750 | 19,000** |
| III. EQUIPMENT | 1,800 | 330,000* |
| IV-B TRAVEL | 2,500 | 2,500 |
| IV-C MISCELLANEOUS EXPENDITURES | | |
| Legal & Accounting Fees | 3,100 | 3,100 |
| Consultants & Research Assts. | 15,000 | 15,000 |
| Supplies & Materials | 10,000 | 25,000 |
| Telephone | 1,800 | 2,600 |
| Postage | 750 | 750 |
| Publicity & Printing | 1,000 | 1,000 |
| Advertising | 750 | 4,000 |
| Light & Power | 1,200 | 6,000 |
| Service Contracts | | |
| Computer Rental | 30,000 | 140,000** |
| Postage Meter Rental | 144 | 144 |
| Public Relations | 1,000 | 1,000 |
| Rent | 7,000 | 175,000** |
| Maintenance Contracts | | |
| Cleaning Service | 1,116 | 5,500 |
| Typewriter Maintenance | 117 | 200 |
| Trash Disposal | 167 | 500 |

| IV-C MISCELLANEOUS EXPENDITURES (Continued) | 1970 | 1971 |
|---|---|---|
| Insurance | | |
| Workmen's Compensation | 396 | 471 |
| Fire Insurance | | 1,000 |
| Total Categories II, III, IV-B & C in Budget year | 78,590 | 732,765 |
| Total Staff Costs in Budget year | 310,526 | 429,322 |
| Total Expenses Budget Year | 389,116 | 1,162,087 |
| TOTAL DEVELOPMENTAL EXPENSES 1970-71 | | 1,551,203 |

*See Part VI B CAPITAL EXPENDITURE PROJECTIONS, 1971 BUDGET, for breakdown of this item.

**See Part VI C BACK-UP DATA, SELECTED EXPENDITURES, 1971 BUDGET for breakdown of this data.

## B) CAPITAL EXPENDITURE PROJECTIONS, 1971 BUDGET

| | |
|---|---|
| 1) Processing Equipment | |
| a) as outlined in Drake Sheahan report | $220,000 |
| b) Additional Mobile Bins | 30,000 |
| c) Other equipment: | |
| 1 Cutter | 5,000 |
| 2 Bursters ] | |
| 2 Decollaters] | 3,000 |
| 2 Multiliths | 6,000 |
| | $264,000 |
| 2) Office Equipment | |
| 78 desks @ $135.00 each | 10,530 |
| 78 chairs @ $60.00 each | 4,680 |
| 40 file cabinets @ $75.00 each | 3,000 |
| 1 Calculator, Print Tape | 1,295 |
| 5 Adding Machines @ $220.00 each | 1,100 |
| 1 Microfilmer | 500 |
| 3 Viewers @ $600. each | 1,800 |
| 10 Typewriters @ $450.00 each | 4,500 |
| 35 Chairs, side @ $50.00 each | 1,750 |
| 1 Copier | 1,400 |
| 10 Stands @ $50.00 each | 500 |
| | $31,055 |
| 3) Telephone Installation Charges | 1,250 |
| 4) Other Equipment | 33,695 |
| | $330,000 |

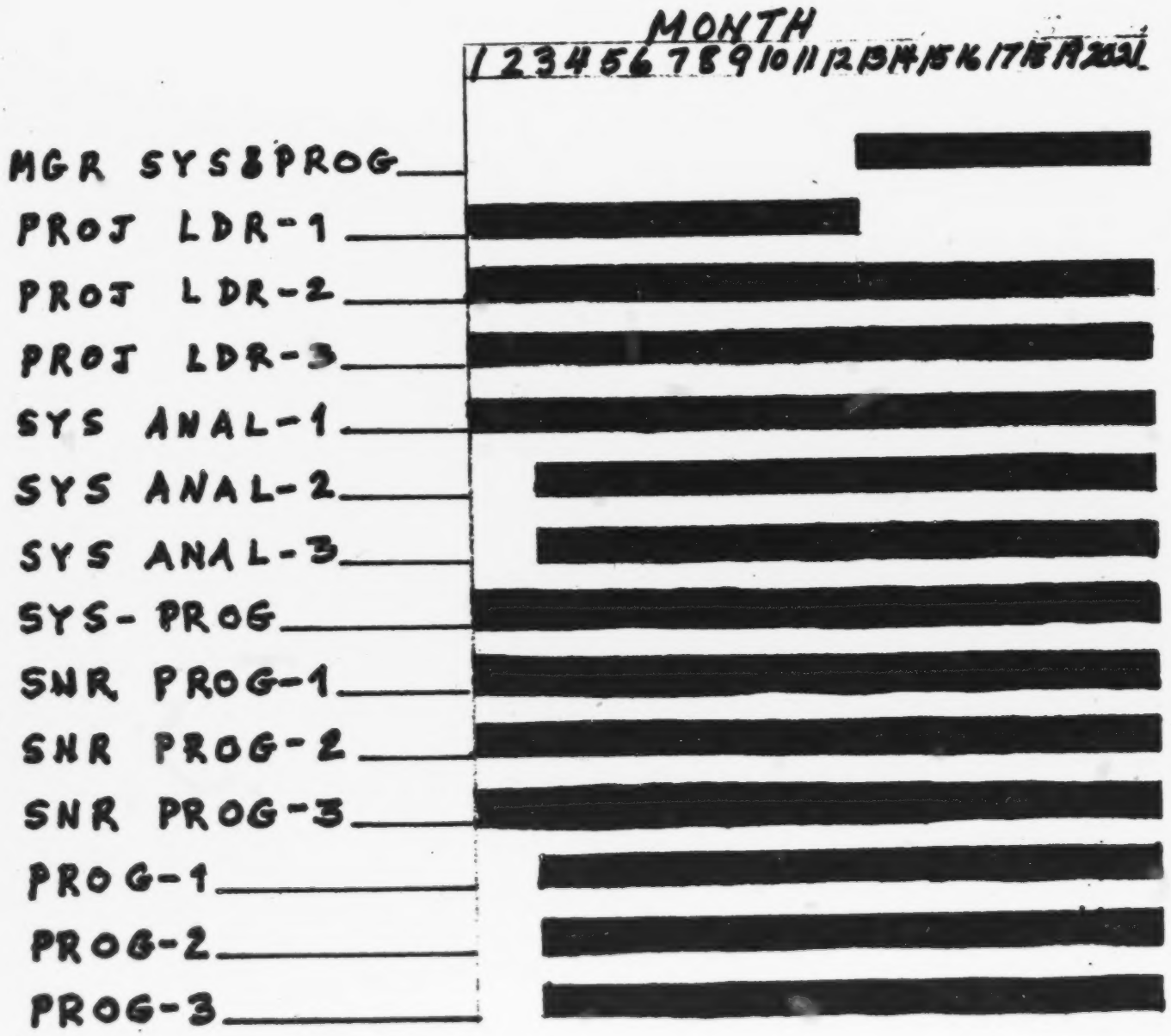
## C) BACK-UP DATA, SELECTED EXPENDITURES, 1971 BUDGET

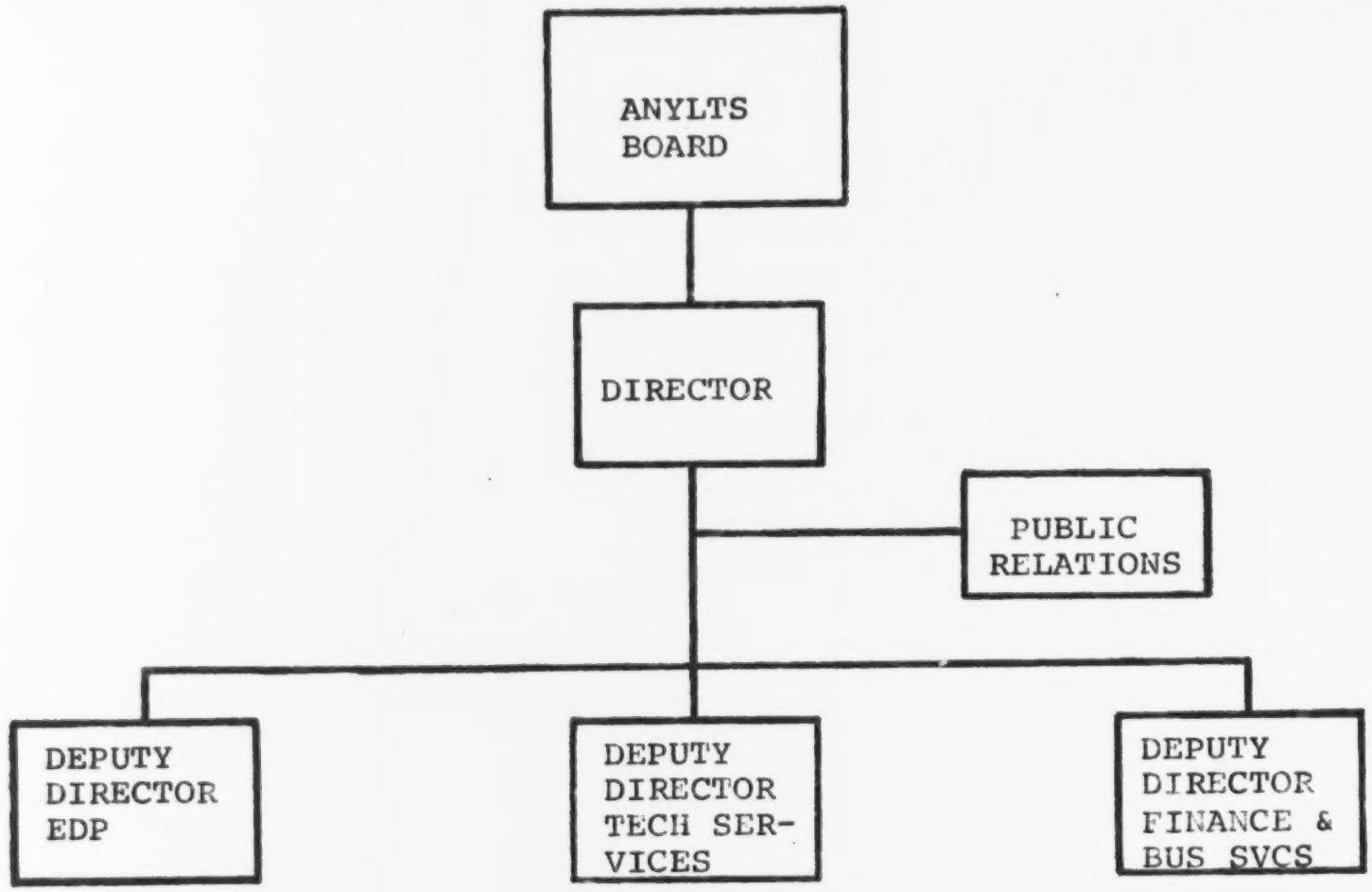
| | | |
|---|---|---|
| Library Materials | | $19,000 |
| Books and reports, subscriptions to periodicals, etc. | $ 1,000. | |
| Subscription to Bowker magnetic tape file of Books-In-Print for creation of Order Master File | 18,000. | |
| Computer Rental | | 140,000 |
| Outside test time 1st 5 mos. | 27,500 | |
| Rental IBM configuration, last 7 months @ $16,069/mo. | 112,483 | |
| Rent | | 175,000 |

Based on $3.50/sq. ft. for 50,000 sq. ft. building. Costs of renovation, or construction of computer room are not included. Such costs cannot be estimated until authorization is provided to seek appropriate building, since amount of renovation and/or construction will be determined by condition of building which comes on market at that time. Although highly unlikely, it is possible that at the time we are ready, a building could be located which would have a computer room suited to our needs. At this time no such building that we know of has come on the market.

EXHIBIT VI-a

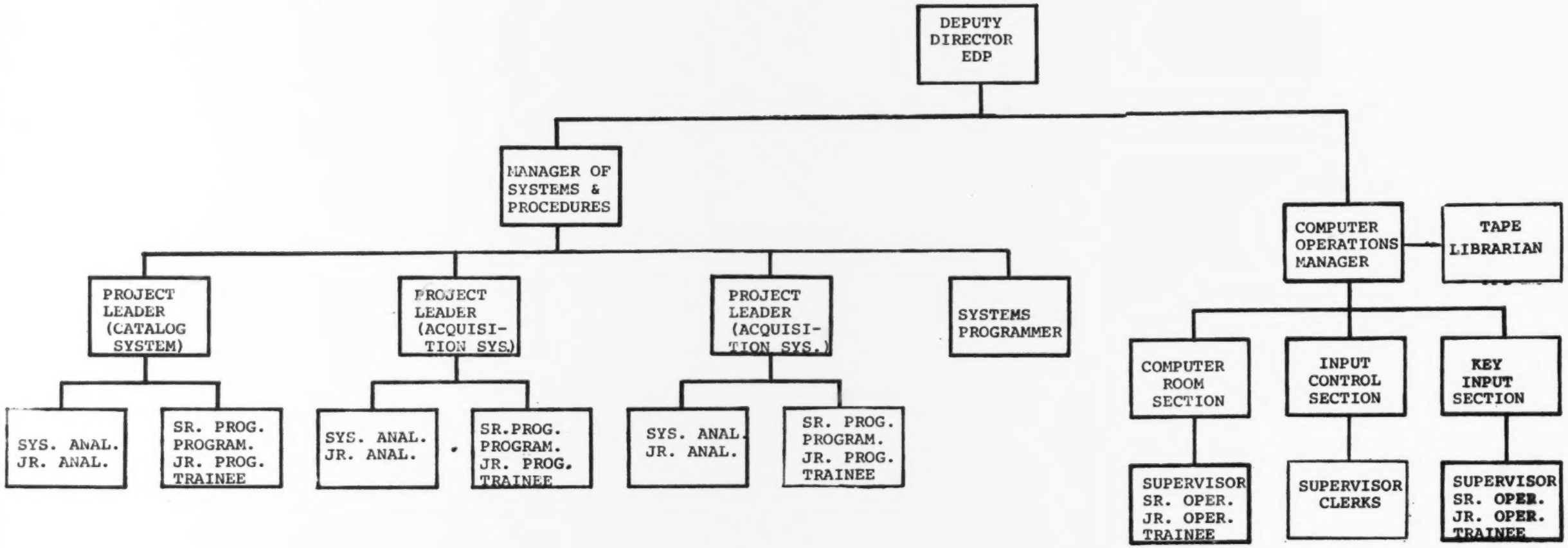
SYSTEMS AND PROGRAMMING PERSONNEL SCHEDULE





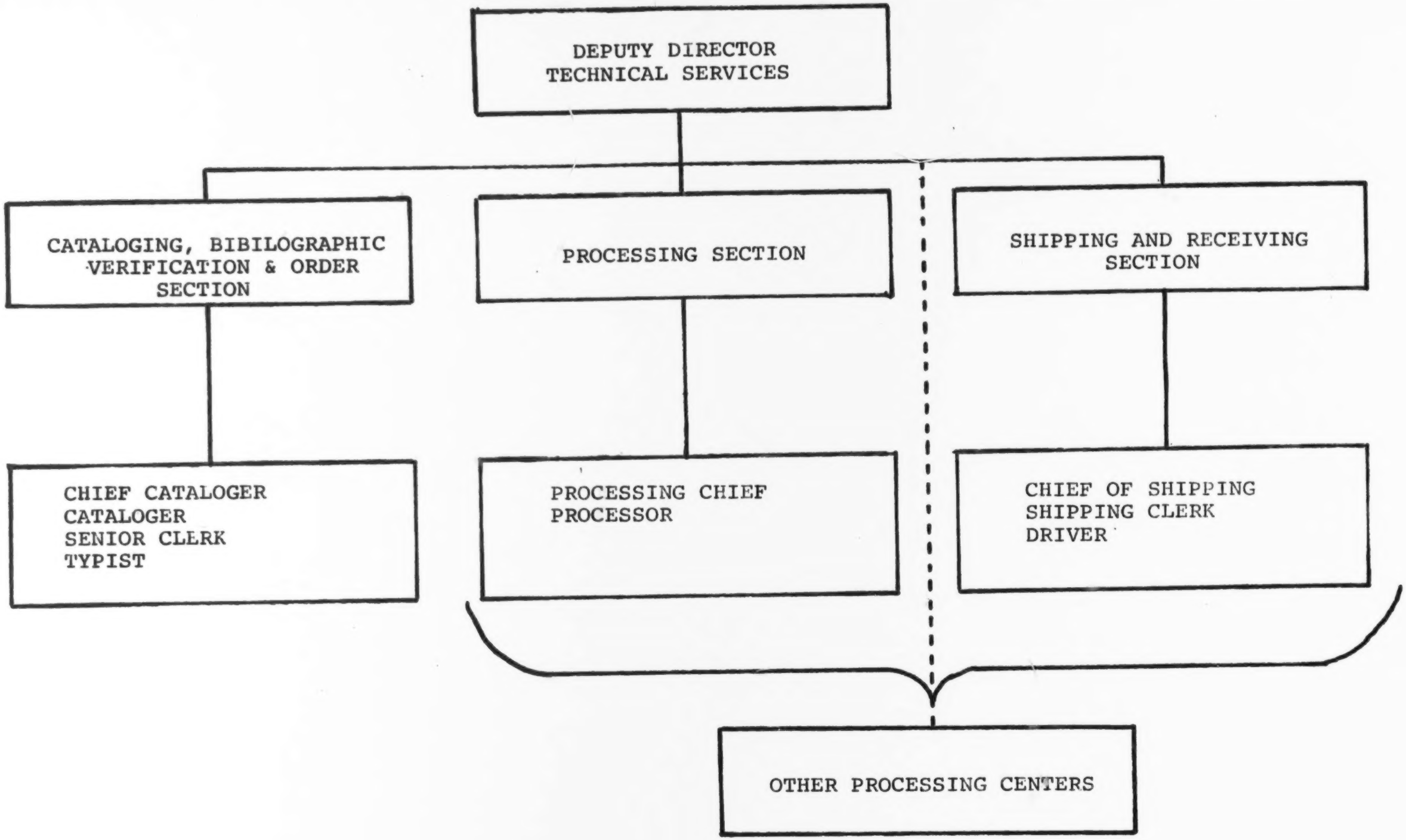

## VII. TABLE OF ORGANIZATION

CHART 1



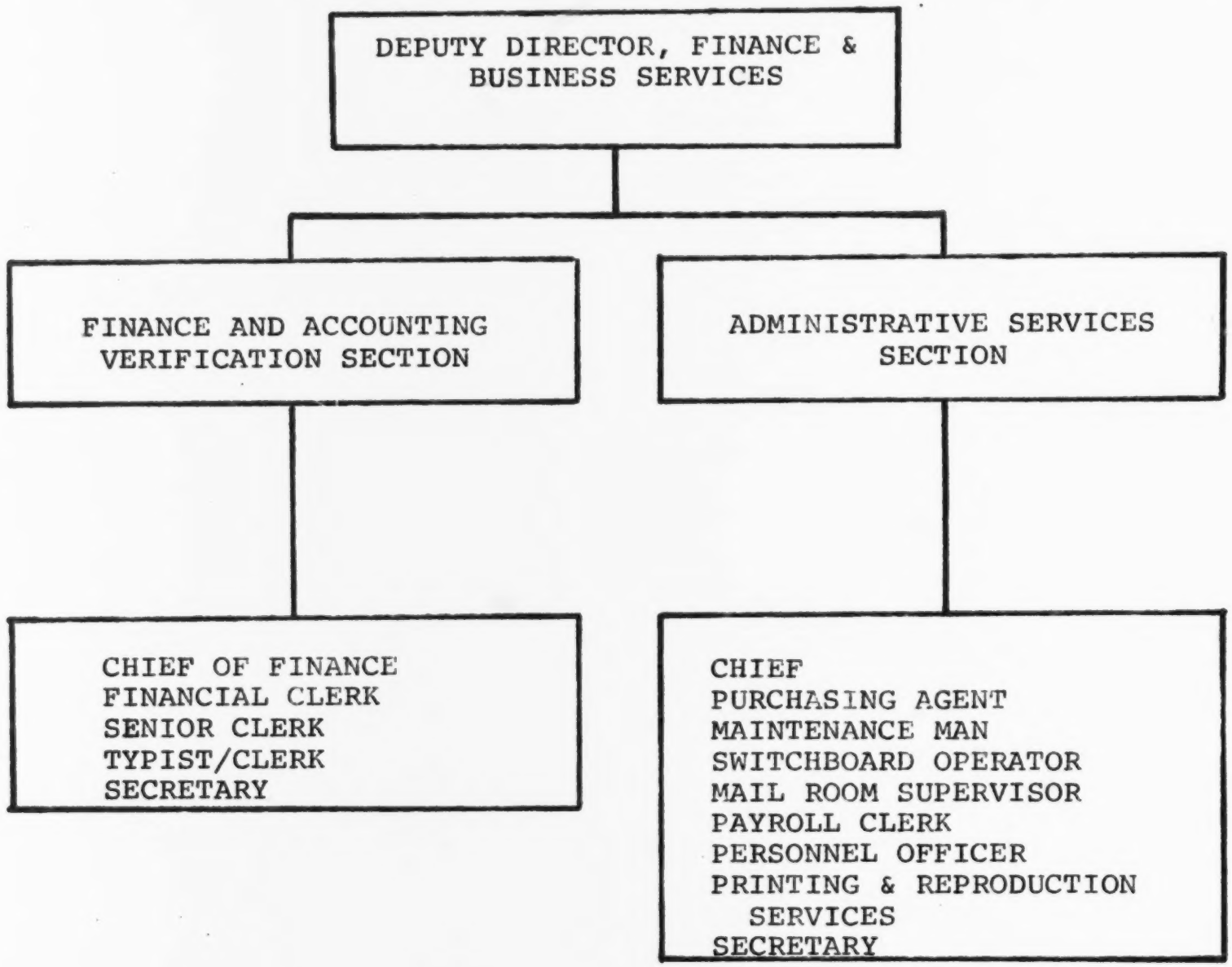

VII. TABLE OF ORGANIZATION

CHART 2




VII. TABLE OF ORGANIZATION

CHART 3




VII. TABLE OF ORGANIZATION

CHART 4

## VIII. SALARY SCALES

### A) ANYLTS APPROVED AND PROPOSED

See memorandum of November 21, 1969 previously distributed.

## VIII. SALARY SCALES

### B) NASSAU COUNTY GRADED SALARY PLAN, EFFECTIVE 7/1/69

| GRADE | Step 1 1st Yr. | Step 2 2nd Yr. | Step 3 3rd Yr. | Step 4 4th Yr. | Step 5 5th Yr. |
|---|---|---|---|---|---|
| 1 | 4281 | 4502 | 4722 | 4943 | 5164 |
| 2 | 4539 | 4776 | 5013 | 5250 | 5487 |
| 3 | 4798 | 5051 | 5304 | 5557 | 5810 |
| 4 | 5057 | 5326 | 5595 | 5864 | 6133 |
| 5 | 5380 | 5664 | 5950 | 6235 | 6520 |
| 6 | 5703 | 6009 | 6315 | 6623 | 6929 |
| 7 | 6068 | 6396 | 6725 | 7053 | 7381 |
| 8 | 6477 | 6833 | 7188 | 7543 | 7898 |
| 9 | 6951 | 7333 | 7715 | 8098 | 8479 |
| 10 | 7489 | 7903 | 8318 | 8742 | 9188 |
| 11 | 8091 | 8544 | 9026 | 9511 | 9999 |
| 12 | 8771 | 9296 | 9824 | 10351 | 10877 |
| 13 | 9558 | 10131 | 10704 | 11277 | 11850 |
| 14 | 10461 | 11086 | 11710 | 12335 | 12960 |
| 15 | 11455 | 12144 | 12833 | 13520 | 14209 |
| 16 | 12520 | 13273 | 14024 | 14777 | 15528 |
| 17 | 13655 | 14475 | 15298 | 16115 | 16941 |
| 18 | 14870 | 15761 | 16652 | 17542 | 18433 |
| 19 | 16084 | 17050 | 18017 | 18982 | 19950 |
| 20 | 17415 | 18462 | 19509 | 20557 | 21604 |
| 21 | 18804 | 19932 | 21060 | 22188 | 23315 |
| 22 | 20250 | 21464 | 22679 | 23895 | 25110 |
| 23 | 21754 | 23061 | 24369 | 25677 | 26985 |
| 24 | 23374 | 25063 | 26753 | 28442 | |
| 25 | 25110 | 26845 | 28581 | | |
| 26 | 26961 | 28697 | | | |
| 27 | 28929 | | | | |